

REMARKS

Reconsideration of this application is respectfully requested. Claims 1- 4, 7 and 8 stand rejected under § 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Claims 1-36 stand rejected under 35 § U.S.C. 103(a) as being unpatentable over House et al. (5,274,783) (hereinafter "House") in view of Wills et al. (6,002,692) (hereinafter "Wills").

No claims have been amended or canceled.

Claim Rejections -35 USC § 112

The Examiner rejected Claims 1-4, 7 and 8 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner states:

In claim 1, the phrase "data streams" lacks antecedent basis.
In claim 1, the phrase "a data transfer" lacks antecedent basis.
In claim 7, the phrase "transaction stream" lacks antecedent basis.

(Office Action page 2)

Applicants respectfully traverse all of the Examiner's 35 U.S.C. 112 rejections. Claim 1 states "wherein a plurality of independent data streams exist." The term "data streams" does not lack antecedent basis. The Examiner is invited to remove or clarify this rejection.

Further, the term "data streams" does not appear in claims 2-4. The Examiner is invited to remove or clarify this rejection.

The term "a data transfer" does not lack antecedent basis. The Examiner is invited to remove or clarify this rejection.

Claim 7 states “guarantees for at least one transaction stream between initiator functional blocks and the target functional blocks.” The term “at least one transaction stream” does not lack antecedent basis. The Examiner is invited to remove or clarify this rejection.

Further, the term “transaction stream” does not appear in claim 8. The Examiner is invited to remove or clarify this rejection.

Claim Rejections -35 USC § 103

The Examiner rejected Claims 1-36 under 35 U.S.C. 103(a) as being unpatentable over House in view of Wills. The Examiner states:

As per independent claims 1,14, 20 and 31, House discloses a method for communicating data between functional blocks (see abstract), in a computing device, comprising:
establishing a thread identifier (fig 1, col 2, line 60), for each independent data stream between an initiator functional block and a target functional block, wherein a plurality of independent data streams exist between the initiator functional block and the target functional block, (fig 1, col 2, lines 34-67).

House does not specifically disclose to meet a service guarantee on a per thread identifier basis.

However, Will discloses to meet a service guarantee on a per thread identifier basis (col 5, lines 19-34).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine Will with House because it would provide a guaranteed throughput.

(Office Action pages 3-4)

However, applicant respectfully asserts that claim 1 is not obvious under 35 U.S.C. 103(a) in view of Wills and House. Claim 1 states:

A method for communicating data between functional blocks in a computing device, comprising:

establishing a thread identifier for each independent data stream between an initiator functional block and a target functional block, wherein a plurality of independent data streams exist between the initiator functional block and the target functional block . . .

(Emphasis added)

House does not disclose the existence of multiple independent data streams between two functional blocks. House discloses a bus extender which contains transfer and logic circuitry that merely implement one data stream between devices. House discloses:

In particular, the transfer and logic circuitry (i) receives first connection-control signals from one of the buses, which signals have fields of data designating the extender as the addressee and designating the source of the signals; (ii) identifies the ultimate target for the inter-bus communication based on data contained in the first connection-control signals, or, depending on the direction of the communication, stored in a latch within the extender itself; (iii) generates second connection-control signals including fields of data designating the extender as the source of the communication and the ultimate target; and (iv) provides these latter signals to the appropriate transceiver for transmission over the other bus.

(House, col. 2, lines 40-53) (emphasis added)

House discloses a method for creating a single data stream between devices connected to an auxiliary bus and a main bus. Each communication originating from a device connected to the auxiliary bus to the main bus is processed by the transfer and logic circuitry as detailed above. House does not disclose or suggest the existence of multiple independent data streams between one device and another. House merely discloses that all data originating from one device and having the same destination is processed in the same fashion. Therefore, House does not disclose “a plurality of independent data streams” between a device on the auxiliary bus and the main bus.

House does not disclose creating two or more thread identifiers to correspond with the multiple independent data streams between a particular initiator functional block and its target functional block. House merely discloses assigning a single identification code a device connected to the main bus. House discloses:

[T]he bus extender takes advantage of dual-tier, hierarchal addressing used in the SCSI standards to direct messages to the designated devices on the other bus. In the addressing scheme employed in the invention, each device connected to either the main or auxiliary bus is identified by a unique identification code ("ID"). In addition, each device ID is associated with an auxiliary identification or address-descriptor, which in the SCSI standards is referred to as a LUN or logical unit number.

...

For purposes of communication, the bus extender has an ID on both the main and auxiliary buses.

...

In order to pass messages received over the main bus from a host computer, i.e., during SELECTION, the extender first converts the LUN field data of the connection-control signals received over the main bus to the ID of the target on the auxiliary bus, and supplies the extender's own auxiliary-bus ID as the initiator ID in the auxiliary-bus connection-control signals.

(House, col. 2, lines 54 through col. 3 line 9) (emphasis added)

Accordingly, House discloses that a device has a single ID associated with it. House does not disclose "establishing a thread identifier for each independent data stream between an initiator functional block and a target functional block, wherein a plurality of independent data streams exist between the initiator functional block and the target functional block."

House does not disclose a target device issuing data transfers to threads other than the thread identified with a busy signal. Claim 1 states:

the initiator functional block withholding issuance of data transfers associated with the thread identifier in response to the issued busy

signal, wherein data transfers not associated with the thread identifier identified by the issued busy signal may be issued.

(Emphasis added)

House merely discloses a target device issuing a busy signal if unable to accept a data transfer. House does not disclose actually issuing data transfers not associated with the thread identifier identified by the issued busy signal. House is silent regarding multiple thread identifiers existing between the initiator functional block and the target functional block. House discloses:

If at the time the host computer 14 is attempting to control the main bus 26, any other device or devices are likewise attempting to do so, the bus is deemed to be in contention. In that case, according to the SCSI standards, the contending device with the highest ID is given priority. Thus, for example, if the extender 30 were also attempting to control the main bus 26, the control logic 50 would assert BUSY and the extender's ID, i.e., ID.sub.-- 0, on the data lines. Since, the computer's ID.sub.-- 6 is higher than the extender's ID.sub.-- 0, the extender 30 would fall off the main bus 26, and the host computer 14 would gain control of the main bus 26.

(Emphasis added) (House, col. 8, lines 62-68, col. 9, lines 1-5)

House discloses a method for determining which data transfers are issued based solely on priority. House is silent regarding analyzing which thread identifier is busy. House does not disclose allowing data transfers not associated with the thread identifier to issue.

House discloses in order to transfer data while a busy signal is issued, the host computer issues a request that overrides the BUSY signal issued to by the extender due to its higher priority. Thus, when the host computer takes control of the bus, the data transfers associated with the extender are not allowed to issue, despite the fact

that these pending data transfers could be unrelated to the data transfer which received a busy signal.

Accordingly, House does not disclose several of the limitations recited in claim 1.

Further, Claim 1 states:

mapping a data flow from the initiator functional block to the target functional block to a thread indicated by the thread identifier to meet a service guarantee on a per thread identifier basis

(Emphasis added)

Wills does not disclose meeting service guarantees on a per thread identifier basis. Wills discloses:

The converter also splits the traffic into multiple priorities so as to assure quality of service (QoS) for timing critical traffic.

(Wills, col. 5, lines 19-21)

Wills discloses a method for ensuring quality of service by solely prioritizing traffic. However, Wills is silent on the mechanism to identify the source identity of that traffic. Wills does not disclose meeting service guarantees on a per thread basis. Wills discloses splitting traffic, but does not differentiate between two data streams originating from the same functional block yet belonging to two different thread identifiers. Hence, Wills does not teach or suggest does not disclose meeting service guarantees on a per thread basis.

Accordingly, neither House or Wills, individually or in combination, teaches or suggest the limitations in claim 1. Further, inadequate motivation exists to combine House or Wills because applicant traverses that it would have been obvious to combine the two references and the examiner does not cite where that motivation comes from. Applicant asserts the motivation presumably comes from the Examiner reading

applicant's patent application. It would be in appropriate hindsight to draw the only motivation to combine House and Wills based upon applicant's own disclosure. Therefore, independent claim 1 is not rendered obvious under 35 USC 103 in view of House and Wills.

Given that claims 2-13 depend from and include the limitations of claim 1, applicants submit that claims 2-13 are not obvious under 35 USC 103 in view of House and Wills.

Likewise, applicants traverse the Examiner's rejection of independent claim 14. Claim 14 states:

14. A method for communicating data between functional blocks in a computing device, comprising:
...
if the target functional block is unable to accept a data transfer from the initiator functional block, the target functional block issuing a busy signal identified by the thread identifier;
...
mapping a data flow from the initiator functional block to the target functional block to a thread indicated by the thread identifier to meet a service guarantee on a per thread identifier basis.

As discussed above, House does not disclose establishing thread identifiers for each data stream between an initiator and target. House and Will do not disclose meeting a service guarantee on a per thread identifier basis. House merely discloses that a device has a single ID associated with that device rather than a thread identifier. House discloses a method for determining which data transfers are issued based solely on priority. House is silent regarding analyzing which thread identifier is busy.

Accordingly, neither House or Wills, individually or in combination, teaches or suggest the limitations in claim 14. Therefore, independent claim 14 is not rendered obvious under 35 USC 103 in view of House and Wills.

Given that claims 15-19 depend from and include the limitations of claim 14, applicants submit that claims 15-19 are not obvious under 35 USC 103 in view of House and Wills.

Likewise, applicants traverse the Examiner's rejection of independent claim 20. Claim 20 states:

20. A communication apparatus, comprising:
...
the plurality of signals comprises a thread identifier configured to associate a data transfer with a transaction stream between the initiator functional block and target functional block;
...
the initiator functional block associated withholds issuance of data transfers associated with the thread identifier if the credit signal indicates that the target functional block can accept no data transfers, . . . to enable a determination of service guarantees for transaction streams between initiator functional blocks and target functional blocks.

As discussed above, House does not disclose a thread identifier configured to associate a data transfer with a transaction stream between an initiator and target. House and Will do not disclose withholding issuance of data transfers associated with the thread identifier . . . to enable a determination of service guarantees for transaction streams. House merely discloses that a device has a single ID associated with it. House discloses a method for determining which data transfers are issued based solely on priority. House is silent regarding analyzing which thread identifier is busy.

Accordingly, neither House or Wills, individually or in combination, teaches or suggest the limitations in claim 20. Therefore, independent claim 20 is not rendered obvious under 35 USC 103 in view of House and Wills.

Given that claims 21-30 depend from and include the limitations of claim 20, applicants submit that claims 21-30 are not obvious under 35 USC 103 in view of House and Wills.

Likewise, applicants traverse the Examiner's rejection of independent claim 31. Claim 31 states:

31. A communication apparatus, comprising:
...
at least one thread identifier configured to associate a data transfer with a transaction stream that the data transfer between an initiator functional block and a target functional block are part of; wherein if the target functional block is unable to accept a data transfer from the initiator functional block, the target functional block issuing a busy signal identified by the thread identifier
...
a mapping algorithm to map data flow of the transaction stream and aggregate service guarantees from components between the initiator functional block and the target functional block.

As discussed above, House does not disclose a thread identifier configured to associate a data transfer with a transaction stream between an initiator and target. House and Will do not disclose a mapping algorithm to map data flow of the transaction stream and aggregate service guarantees from components between the initiator functional block and the target functional block. House merely discloses that a device has a single ID associated with that device rather than a thread identifier. House discloses a method for determining which data transfers are issued based solely on priority. House is silent regarding analyzing which thread identifier is busy.

Accordingly, neither House or Wills, individually or in combination, teaches or suggest the limitations in claim 31. Therefore, independent claim 31 is not rendered obvious under 35 USC 103 in view of House and Wills.


Given that claims 32-36 depend from and include the limitations of claim 31, applicants submit that claims 32-36 are not obvious under 35 USC 103 in view of House and Wills.

Conclusion

It is respectfully submitted that in view of the amendments and remarks set forth herein, the rejections and objections have been overcome. Applicant respectfully requests that a timely Notice of Allowance be issued in this case. Applicants reserve all rights with respect to the application of the doctrine equivalents. If there are any additional charges, please charge them to our Deposit Account No. 02-2666.

Respectfully submitted,
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